PAGE: 1

1808

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/849,404

DATE: 09/09/97
TIME: 12:33:19

INPUT SET: S20138.raw

This Raw Listing contains the General
Information Section and up to the first 5 pages.

```
 1                              SEQUENCE LISTING
 2
 3   (1)    General Information:
 4
 5   (i)APPLICANT:LISA ANNE LAFFEND
 6   VASANTHA NAGARAJAN
 7   CHARLES EDWIN NAKAMURA
 8
 9   (ii)TITLE OF INVENTION:BIOCONVERSION OF A FERMENTABLE
10   CARBON SOURCE TO 1,3-PROPANE-
11   DIOL BY A SINGLE MICROORGANISM
12
13   (iii)NUMBER OF SEQUENCES:   46
14
15   (iv)CORRESPONDENCE ADDRESS:
16   (A)ADDRESSEE:  E. I. DUPONT DE NEMOURS AND COMPANY
17   (B)STREET:  1007 MARKET STREET
18   (C)CITY:  WILMINGTON
19   (D)STATE:  DELAWARE
20   (E)COUNTRY:  UNITED STATES OF AMERICA
21   (F)ZIP:  19898
22
23   (iv)CORRESPONDENCE ADDRESS:
24   (A)ADDRESSEE:  GENENCOR INTERNATIONAL, INC.
25   (B)STREET:  4 CAMBRIDGE PLACE
26   1870 SOUTH WINTON ROAD
27   (C)CITY:  ROCHESTER
28   (D)STATE:  NEW YORK
29   (E)COUNTRY:  UNITED STATES OF AMERICA
30   (F)ZIP:  14618
31
32   (v)COMPUTER READABLE FORM:
33   (A)MEDIUM TYPE:  3.50 INCH DISKETTE
34   (B)COMPUTER:  IBM PC COMPATIBLE
35   (C)OPERATING SYSTEM:  MICROSOFT WORD FOR WINDOWS 95
36   (D)SOFTWARE:  MICROSOFT WORD VERSION 7.0a
37
38   (vi)CURRENT APPLICATION DATA:
39   (A)APPLICATION NUMBER:
40   (B)FILING DATE:
41   (C)CLASSIFICATION:
42
43   (vii)PRIOR APPLICATION DATA:
44   (A)APPLICATION NUMBER:  08/440,293
45   (B)FILING DATE:  MAY 12, 1995
46
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INPUT SET: S20138.raw

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47  (viii)ATTORNEY/AGENT INFORMATION:
48  (A)NAME:  LINDA AXAMETHY FLOYD
49  (B)REGISTRATION NUMBER:  33,692
50  (C)REFERENCE/DOCKET NUMBER:  CR-9715-C
51
52  (ix)TELECOMMUNICATION INFORMATION:
53  (A)TELEPHONE:  302-892-8112
54  (B)TELEFAX:  302-773-0164
55
56
57  (2) INFORMATION FOR SEQ ID NO:1:
58
59  (i) SEQUENCE CHARACTERISTICS:
60  (A) LENGTH:  12145 base pairs
61  (B) TYPE:  nucleic acid
62  (C) STRANDEDNESS:  single
63  (D) TOPOLOGY:  linear
64
65  (ii) MOLECULE TYPE:  DNA (genomic)
66
67  (xi) SEQUENCE DESCRIPTION:  SEQ ID NO:1:
68
69  GTCGACCACC ACGGTGGTGA CTTTAATGCC GCTCTCATGC AGCAGCTCGG TGGCGGTCTC      60
70
71  AAAATTCAGG ATGTCGCCGG TATAGTTTTT GATAATCAGC AAGACGCCTT CGCCGCCGTC     120
72
73  AATTTGCATC GCGCATTCAA ACATTTTGTC CGGCGTCGGC GAGGTGAATA TTTCCCCCGG     180
74
75  ACAGGCGCCG GAGAGCATGC CCTGGCCGAT ATAGCCGCAG TGCATCGGTT CATGTCCGCT     240
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77  GCCGCCGCCG GAGAGCAGGG CCACCTTGCC AGCCACCGGC GCGTCGGTGC GGGTCACATA     300
78
79  CAGCGGGTCC TGATGCAGGG TCAGCTGCGG ATGGGCTTTA GCCAGCCCCT GTAATTGTTC     360
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81  ATTCAGTACA TCTTCAACAC GGTTAATCAG CTTTTTCATT ATTCAGTGCT CCGTTGGAGA     420
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83  AGGTTCGATG CCGCCTCTCT GCTGGCGGAG GCGGTCATCG CGTAGGGGTA TCGTCTGACG     480
84
85  GTGGAGCGTG CCTGGCGATA TGATGATTCT GGCTGAGCGG ACGAAAAAAA GAATGCCCCG     540
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87  ACGATCGGGT TTCATTACGA AACATTGCTT CCTGATTTTG TTTCTTTATG GAACGTTTTT     600
88
89  GCTGAGGATA TGGTGAAAAT GCGAGCTGGC GCGCTTTTTT TCTTCTGCCA TAAGCGGCGG     660
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91  TCAGGATAGC CGGCGAAGCG GGTGGGAAAA AATTTTTTGC TGATTTTCTG CCGACTGCGG     720
92
93  GAGAAAAGGC GGTCAAACAC GGAGGATTGT AAGGGCATTA TGCGGCAAAG GAGCGGATCG     780
94
95  GGATCGCAAT CCTGACAGAG ACTAGGGTTT TTTGTTCCAA TATGGAACGT AAAAAATTAA     840
96
97  CCTGTGTTTC ATATCAGAAC AAAAAGGCGA AAGATTTTTT TGTTCCCTGC CGGCCCTACA     900
98
99  GTGATCGCAC TGCTCCGGTA CGCTCCGTTC AGGCCGCGCT TCACTGGCCG GCGCGGATAA     960
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RAW SEQUENCE LISTING
PATENT APPLICATION US/08/849,404

INPUT SET: S20138.raw

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105   TGCCAAAAAC CTGGCGGAGA GCTTCTTCGT CATCGCTGAC GATTTCGTAA TGAAGCTGGC   1140
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107   GGGAGAGAAA GTGGTGAATG GCCTGCAGAG CCACGATATT CGCTGCCATG CGGAACGGTT   1200
108
109   TAACGGCGAA TGCAGCCATG CGGAAATCAA CCGTCTGATG GCGATTTTGC AAAAACAGGG   1260
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111   CTGCCGCGGC GTGGTCGGGA TCGGCGGTGG TAAAACCCTC GATACCGCGA AGGCGATCGG   1320
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115   CAGCGCGCTG TCGGTGATCT ACACCGAAGC GGGCGAGTTT GAAGAGTATC TGATCTATCC   1440
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117   GAAAAACCCG GATATGGTGG TGATGGACAC GGCGATTATC GCCAAAGCGC CGGTACGCCT   1500
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119   GCTGGTCTCC GGCATGGGCG ATGCGCTCTC CACCTGGTTC GAGGCCAAAG CTTGCTACGA   1560
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121   TGCGCGCGCC ACCAGCATGG CCGGAGGACA GTCCACCGAG GCGGCGCTGA GCCTCGCCCG   1620
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123   CCTGTGCTAT GATACGCTGC TGGCGGAGGG CGAAAAGGCC CGTCTGGCGG CGCAGGCCGG   1680
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125   GGTAGTGACC GAAGCGCTGG AGCGCATCAT CGAGGCGAAC ACTTACCTCA GCGGCATTGG   1740
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127   CTTTGAAAGC AGTGGCCTGG CCGCTGCCCA TGCAATCCAC AACGGTTTCA CCATTCTTGA   1800
128
129   AGAGTGCCAT CACCTGTATC ACGGTGAGAA AGTGGCCTTC GGTACCCTGG CGCAGCTGGT   1860
130
131   GCTGCAGAAC AGCCCGATGG ACGAGATTGA AACGGTGCAG GGCTTCTGCC AGCGCGTCGG   1920
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133   CCTGCCGGTG ACGCTCGCGC AGATGGGCGT CAAAGAGGGG ATCGACGAGA AAATCGCCGC   1980
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135   GGTGGCGAAA GCTACCTGCG CGGAAGGGGA AACCATCCAT AATATGCCGT TTGCGGTGAC   2040
136
137   CCCGGAGAGC GTCCATGCCG CTATCCTCAC CGCCGATCTG TTAGGCCAGC AGTGGCTGGC   2100
138
139   GCGTTAATTC GCGGTGGCTA AACCGCTGGC CCAGGTCAGC GGTTTTTCTT TCTCCCCTCC   2160
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141   GGCAGTCGCT GCCGGAGGGG TTCTCTATGG TACAACGCGG AAAAGGATAT GACTGTTCAG   2220
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143   ACTCAGGATA CCGGGAAGGC GGTCTCTTCC GTCATTGCCC AGTCATGGCA CCGCTGCAGC   2280
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145   AAGTTTATGC AGCGCGAAAC CTGGCAAACG CCGCACCAGG CCCAGGGCCT GACCTTCGAC   2340
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147   TCCATCTGTC GGCGTAAAAC CGCGCTGCTC ACCATCGGCC AGGCGGCGCT GGAAGACGCC   2400
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149   TGGGAGTTTA TGGACGGCCG CCCCTGCGCG CTGTTTATTC TTGATGAGTC CGCCTGCATC   2460
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151   CTGAGCCGTT GCGGCGAGCC GCAAACCCTG GCCCAGCTGG CTGCCCTGGG ATTTCGCGAC   2520
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RAW SEQUENCE LISTING
PATENT APPLICATION   *US/08/849,404*

INPUT SET: S20138.raw

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156
157  TTTTGCTCGA CGCCGGTGTT TGATAACCAC GGGCGGCTGT TCGGCTCTAT CTCGCTTTGC   2700
158
159  TGTCTGGTCG AGCACCAGTC CAGCGCCGAC CTCTCCCTGA CGCTGGCCAT CGCCCGCGAG   2760
160
161  GTGGGTAACT CCCTGCTTAC CGACAGCCTG CTGGCGGAAT CCAACCGTCA CCTCAATCAG   2820
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163  ATGTACGGCC TGCTGGAGAG CATGGACGAT GGGGTGATGG CGTGGAACGA ACAGGGCGTG   2880
164
165  CTGCAGTTTC TCAATGTTCA GGCGGCGAGA CTGCTGCATC TTGATGCTCA GGCCAGCCAG   2940
166
167  GGGAAAAATA TCGCCGATCT GGTGACCCTC CCGGCGCTGC TGCGCCGCGC CATCAAACAC   3000
168
169  GCCCGCGGCC TGAATCACGT CGAAGTCACC TTTGAAAGTC AGCATCAGTT TGTCGATGCG   3060
170
171  GTGATCACCT TAAAACCGAT TGTCGAGGCG CAAGGCAACA GTTTTATTCT GCTGCTGCAT   3120
172
173  CCGGTGGAGC AGATGCGGCA GCTGATGACC AGCCAGCTCG GTAAAGTCAG CCACACCTTT   3180
174
175  GAGCAGATGT CTGCCGACGA TCCGGAAACC CGACGCCTGA TCCACTTTGG CCGCCAGGCG   3240
176
177  GCGCGCGGCG GCTTCCCGGT GCTACTGTGC GGCGAAGAGG GGGTCGGGAA AGAGCTGCTG   3300
178
179  AGCCAGGCTA TTCACAATGA AAGCGAACGG GCGGGCGGCC CCTACATCTC CGTCAACTGC   3360
180
181  CAGCTATATG CCGACAGCGT GCTGGGCCAG GACTTTATGG GCAGCGCCCC TACCGACGAT   3420
182
183  GAAAATGGTC GCCTGAGCCG CCTTGAGCTG GCCAACGGCG GCACCCTGTT TCTGGAAAAG   3480
184
185  ATCGAGTATC TGGCGCCGGA GCTGCAGTCG GCTCTGCTGC AGGTGATTAA GCAGGGCGTG   3540
186
187  CTCACCCGCC TCGACGCCCG GCGCCTGATC CCGGTGGATG TGAAGGTGAT TGCCACCACC   3600
188
189  ACCGTCGATC TGGCCAATCT GGTGGAACAG AACCGCTTTA GCCGCCAGCT GTACTATGCG   3660
190
191  CTGCACTCCT TTGAGATCGT CATCCCGCCG CTGCGCGCCC GACGCAACAG TATTCCGTCG   3720
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201  AGCCTGACTT TTAGCGCCAT CGAAAAGGAA GCTATTATTC ACGCCGCCCG GGTGACCAGC   4020
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203  GGGCGGGTGC AGGAGATGTC GCAGCTGCTC AATATCGGCC GCACCACCCT GTGGCGCAAA   4080
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INPUT SET: S20138.raw

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210
211   TGCGCGCCAC GTGCAGCTGG GCAGAGGCGA GATTCCTCCC CGGGATCACG AACTGTTTTA    4320
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213   ACGGGCCGCT CTCGGCCATA TTGCGGTCGA TAAGCCGCTC CAGGGCGGTG ATCTCCTCTT    4380
214
215   CGCCGATCGT CTGGCTCAGG CGGGTCAGGC CCCGCGCATC GCTGGCCAGT TCAGCCCCCA    4440
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217   GCACGAACAG CGTCTGCTGA ATATGGTGCA GGCTTTCCCG CAGCCCGGCG TCGCGGGTCG    4500
218
219   TGGCGTAGCA GACGCCCAGC TGGGATATCA GTTCATCGAC GGTGCCGTAG GCCTCGACGC    4560
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221   GAATATGGTC TTTCTCGATG CGGCTGCCGC CGTACAGGGC GGTGGTGCCT TTATCCCCGG    4620
222
223   TGCGGGTATA GATACGATAC ATTCAGTTTC TCTCACTTAA CGGCAGGACT TTAACCAGCT    4680
224
225   GCCCGGCGTT GGCGCCGAGC GTACGCAGTT GATCGTCGCT ATCGGTGACG TGTCCGGTAG    4740
226
227   CCAGCGGCGC GTCCGCCGGC AGCTGGGCAT GAGTGAGGGC TATCTCGCCG GACGCGCTGA    4800
228
229   GCCCGATACC CACCCGCAGG GGCGAGCTTC TGGCCGCCAG GGCGCCCAGC GCAGCGGCGT    4860
230
231   CACCGCCTCC GTCATAGGTT ATGGTCTGGC AGGGGACCCC CTGCTCCTCC AGCCCCCAGC    4920
232
233   ACAGCTCATT GATGGCGCCG GCATGGTGCC CGCGCGGATC GTAAAACAGG CGTACGCCTG    4980
234
235   GCGGTGAAAG CGACATGACG GTCCCCTCGT TAACACTCAG AATGCCTGGC GGAAAATCGC    5040
236
237   GGCAATCTCC TGCTCGTTGC CTTTACGCGG GTTCGAGAAC GCATTGCCGT CTTTTAGAGC    5100
238
239   CATCTCCGCC ATGTAGGGGA AGTCGGCCTC TTTTACCCCC AGATCGCGCA GATGCTGCGG    5160
240
241   AATACCGATA TCCATCGACA GACGCGTGAT AGCGGCGATG GCTTTTTCCG CCGCGTCGAG    5220
242
243   AGTGGACAGT CCGGTGATAT TTTCGCCCAT CAGTTCAGCG ATATCGGCGA ATTTCTCCGG    5280
244
245   GTTGGCGATC AGGTTGTAGC GCGCCACATG CGGCAGCAGG ACAGCGTTGG CCACGCCGTG    5340
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247   CGGCATGTCG TACAGGCCGC CCAGCTGGTG CGCCATGGCG TGCACGTAGC CGAGGTTGGC    5400
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249   GTTATTGAAA GCCATCCCGG CCAGCAGAGA AGCATAGGCC ATGTTTTCCC GCGCCTGCAG    5460
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251   ATTGCTGCCG AGGGCCACGG CCTGGCGCAG GTTGCGGGCG ATGAGGCGGA TCGCCTGCAT    5520
252
253   GGCGGCGGCG TCCGTCACCG GGTTAGCGTC TTTGGAGATA TAGGCCTCTA CGGCGTGGGT    5580
254
255   CAGGGCATCC ATCCCGGTCG CCGCGGTCAG GGCGGCCGGT TTACCGATCA TCAGCAGTGG    5640
256
257   ATCGTTGATA GAGACCGACG GCAGTTTGCG CCAGCTGACG ATCACAAACT TCACTTTGGT    5700
258
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PAGE: 6

RAW SEQUENCE LISTING
PATENT APPLICATION - *US/08/849,404*

DATE: 09/09/97
TIME: 12:33:46

INPUT SET: S20138.raw

****** PREVIOUSLY ERRORED SEQUENCES - EDITED *****

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1005    (2) INFORMATION FOR SEQ ID NO:39:
1006
1007    (i) SEQUENCE CHARACTERISTICS:
1008    (A) LENGTH:  34 base pairs
1009    (B) TYPE:  nucleic acid
1010    (C) STRANDEDNESS:  single
1011    (D) TOPOLOGY:  linear
1012
1013    (ii) MOLECULE TYPE:  DNA (genomic)
1014
1015    (xi) SEQUENCE DESCRIPTION:  SEQ ID NO:39:
1016
1017    GGAATTCAGA TCTCAGCAAT GCAACAGACA ACCC                      34
1018
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SEQUENCE VERIFICATION REPORT
PATENT APPLICATION   *US/08/849,404*

DATE: 09/09/97
TIME: 12:33:48

INPUT SET: S20138.raw

Line   Error   Original Text

1808

PAGE: 1

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/849,404

DATE: 09/09/97
TIME: 12:26:54

INPUT SET: S20138.raw

This Raw Listing contains the General
Information Section and those Sequences
containing ERRORS.

Does Not Comply Corrected Diskette Needed

```
 1                              SEQUENCE LISTING
 2
 3   (1)     General Information:
 4
 5   (i)APPLICANT:LISA ANNE LAFFEND
 6   VASANTHA NAGARAJAN
 7   CHARLES EDWIN NAKAMURA
 8
 9   (ii)TITLE OF INVENTION:BIOCONVERSION OF A FERMENTABLE
10   CARBON SOURCE TO 1,3-PROPANE-
11   DIOL BY A SINGLE MICROORGANISM
12
13   (iii)NUMBER OF SEQUENCES:   46
14
15   (iv)CORRESPONDENCE ADDRESS:
16   (A)ADDRESSEE:  E. I. DUPONT DE NEMOURS AND COMPANY
17   (B)STREET:  1007 MARKET STREET
18   (C)CITY:  WILMINGTON
19   (D)STATE:  DELAWARE
20   (E)COUNTRY:  UNITED STATES OF AMERICA
21   (F)ZIP:  19898
22
23   (iv)CORRESPONDENCE ADDRESS:
24   (A)ADDRESSEE:  GENENCOR INTERNATIONAL, INC.
25   (B)STREET:  4 CAMBRIDGE PLACE
26   1870 SOUTH WINTON ROAD
27   (C)CITY:  ROCHESTER
28   (D)STATE:  NEW YORK
29   (E)COUNTRY:  UNITED STATES OF AMERICA
30   (F)ZIP:  14618
31
32   (v)COMPUTER READABLE FORM:
33   (A)MEDIUM TYPE:  3.50 INCH DISKETTE
34   (B)COMPUTER:  IBM PC COMPATIBLE
35   (C)OPERATING SYSTEM:  MICROSOFT WORD FOR WINDOWS 95
36   (D)SOFTWARE:  MICROSOFT WORD VERSION 7.0a
37
38   (vi)CURRENT APPLICATION DATA:
39   (A)APPLICATION NUMBER:
40   (B)FILING DATE:
41   (C)CLASSIFICATION:
42
43   (vii)PRIOR APPLICATION DATA:
44   (A)APPLICATION NUMBER:  08/440,293
45   (B)FILING DATE:  MAY 12, 1995
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PAGE: 2

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/849,404

DATE: 09/09/97
TIME: 12:26:58

INPUT SET: S20138.raw

```
46
47   (viii)ATTORNEY/AGENT INFORMATION:
48   (A)NAME:  LINDA AXAMETHY FLOYD
49   (B)REGISTRATION NUMBER:  33,692
50   (C)REFERENCE/DOCKET NUMBER:  CR-9715-C
51
52   (ix)TELECOMMUNICATION INFORMATION:
53   (A)TELEPHONE:  302-892-8112
54   (B)TELEFAX:  302-773-0164
55
56
```

ERRORED SEQUENCES FOLLOW:

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      1005   (2) INFORMATION FOR SEQ ID NO:39:
      1006         (i)
-->   1007   (I)SEQUENCE CHARACTERISTICS:
-->   1008   (A)LENGTH:  34 base pairs
-->   1009   (B)TYPE:  nucleic acid
-->   1010   (C)STRANDEDNESS:  single
-->   1011   (D)TOPOLOGY:  linear
      1012
      1013   (ii) MOLECULE TYPE:  DNA (genomic)
      1014
-->   1015   (xi) SEQUENCE DESCRIPTION:  SEQ ID NO:39:
      1016
      1017   GGAATTCAGA TCTCAGCAAT GCAACAGACA ACCC                    34
      1018
```

SEQUENCE VERIFICATION REPORT
PATENT APPLICATION *US/08/849,404*

INPUT SET: S20138.raw

Line	Error	Original Text
994	Entered (35) and Calc. Seq. Length (34) differ	(A)LENGTH: 35 base pairs
1007	Unknown or Misplaced Identifier	(I)SEQUENCE CHARACTERISTICS:
1008	Unknown or Misplaced Identifier	(A)LENGTH: 34 base pairs
1009	Unknown or Misplaced Identifier	(B)TYPE: nucleic acid
1010	Unknown or Misplaced Identifier	(C)STRANDEDNESS: single
1011	Unknown or Misplaced Identifier	(D)TOPOLOGY: linear
1015	Wrong Or Missing Strandedness Value	(xi)SEQUENCE DESCRIPTION: SEQ ID NO:39:
1015	Wrong or Missing Sequence Topology	(xi)SEQUENCE DESCRIPTION: SEQ ID NO:39:

CRF Errors Corrected by the STIC System Branch

Serial Number: 08/849,404

CRF Processing Date: 9/8/99
Edited by: _____
Verified by: _____ (STIC staff)

☐ Changed a file from non-ASCII to ASCII

☑ Changed the margins in cases where the sequence text was "wrapped" down to the next line.

☐ Edited a format error in the Current Application Data section, specifically: _____

☐ Edited the Current Application Data section with the actual current number. The number inputted by the applicant was ☐ the prior application data; or ☐ other _____.

☐ Added the mandatory heading and subheadings for "Current Application Data".

☑ Edited the "Number of Sequences" field. The applicant spelled out a number instead of using an integer.

☐ Changed the spelling of a mandatory field (the headings or subheadings), specifically: _____

☐ Corrected the SEQ ID NO when obviously incorrect. The sequence numbers that were edited were: _____

☐ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited: _____

☐ Corrected subheading placement. All responses must be on the same line as each subheading. If the applicant placed a response below the subheading, this was moved to its appropriate place.

☐ Inserted colons after headings/subheadings. Headings edited included: _____

☐ Deleted extra, invalid, headings used by an applicant, specifically: _____

☐ Deleted: ☐ non-ASCII "garbage" at the beginning/end of files; ☐ secretary initials/filename at end of file; ☐ page numbers throughout text; ☐ other invalid text, such as_____ .

☐ Inserted mandatory headings, specifically: _____

☐ Corrected an obvious error in the response, specifically: _____

☑ Edited identifiers where upper case is used but lower case is required, or vice versa.

☐ Corrected an error in the Number of Sequences field, specifically: _____

☐ A "Hard Page Break" code was inserted by the applicant. All occurrences had to be deleted.

☐ Deleted *ending* stop codon in amino acid sequences and adjusted the "(A)Length:" field accordingly (error due to a PatentIn bug). Sequences corrected: _____

Other:
_____
_____
_____

*Examiner: The above corrections must be communicated to the applicant in the first Office Action. DO NOT send a copy of this form.   3/1/95